Technical Note

TN 6.36 Modeling StormTech® Chambers in PCSWMM

Introduction

The following note provides instructions for modeling StormTech chambers in the hydrology and hydraulics modeling software PCSWMM. This document does not address setting up a rain gage, modeling a drainage system or inlet and outlet devices. This document has the sole purpose of detailing the process of modeling the chamber storage volume.

StormTech chambers are modeled in PCSWMM using the storage node method with a custom storage curve. This is the recommended method as it is simple to use and represents the volume available at every elevation with more accuracy. It requires the use of the StormTech Cumulative Storages spreadsheet to calculate the stage storage data. Data points are then copied from the spreadsheet into the tabular storage curve in PCSWMM when creating a new storage node.

General

The first step is computing the stage-storage curve using the StormTech Cumulative Storages spreadsheet. Once the project data (chamber model, number of chambers and end caps, stone above and below, stone void % and system area) is entered, the stage-storage curve will be computed.

After inserting the storage node and entering the invert in the PCSWMM model:

> i. In the attributes side bar, select TABULAR for the storage curve;
>
> ii. Select the three dots icon after clicking in the Curve Name cell;
>
> iii. Select add to create a new curve;
>
> iv. Copy the data from the two columns on the right in the StormTech Cumulative Storages spreadsheet (Elevation and area);
>
> > a. Note that PCSWMM only accepts a period as decimal separator.
>
> v. Paste the data into the PCSWMM table.

An example is provided in the following pages.

Example

PROPOSED LAYOUT

28	MC-3500 STORMTECH CHAMBERS
8	MC-3500 STORMTECH ENDCAPS
305	STONE ABOVE (mm)
229	STONE BELOW (mm)
20	STONE VOID (%)
130.0	**SYSTEM VOLUME (m³)**
171.9	SYSTEM AREA (m²) SYSTEM
55.6	PERIMETER (m)
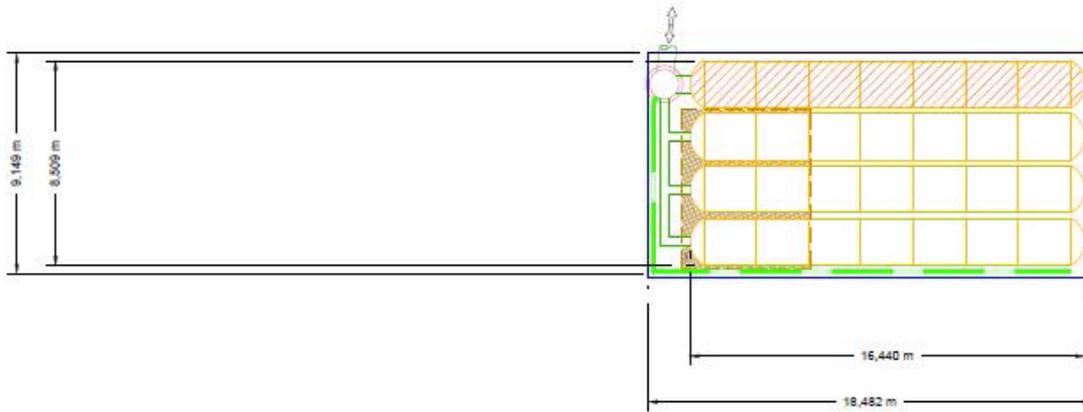
Storage Node Method:

Step 1 – Select the storage node and choose the TABULAR option for the storage curve:

Step 2 – Select the three dots icon after clicking into the Curve Name cell:

Depth (m) $f\ast$	2.6
Initial Depth (m)	0
Surcharge Depth (	0
Ponded Area (m²)	0
Evap. Factor (fract	0
Storage Curve	TABULAR
Curve Name	.
Inflows	
Baseline (L/s)	0
Baseline Pattern	
Time Series	
Scale Factor	1

Step 3 – Click to add a new Storage Curve:
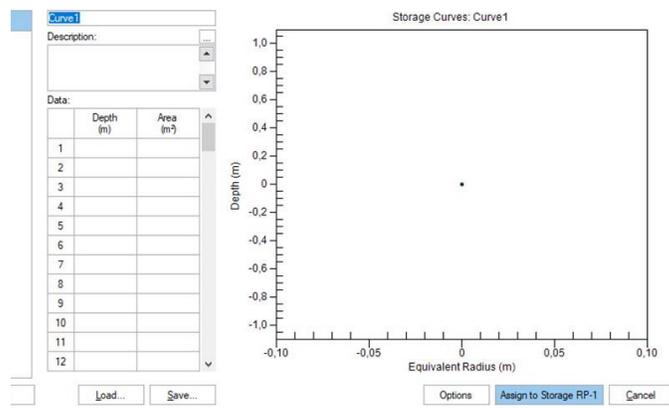
Step 4 – Enter the project data into the StormTech Cumulative Storages spreadsheet and copy the two SWMM columns on the right:

Step 5 – Paste the data into the PCSWMM table and assign the curve to the storage node: